

The Xylophilous Bees and Wasps of a High, Cold Desert: Leslie Gulch, Oregon (Hymenoptera: Apoidea, Vespoidea)

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Abstract.—The wood-loving bees of a high desert area in eastern Oregon were surveyed with trap nests. Eight species of bees and wasps, previously unknown from this part of the country, were recorded.

INTRODUCTION

The Owyhee region of Malheur County, Oregon, is a geologically unique area that contains a relatively large number of endemic plants. Within the region several state parks have been established to promote recreational use and to preserve portions of the Owyhee upland desert. Leslie Gulch has been designated by the Bureau of Land Management as an Area of Critical Environmental Concern (ACEC). The road passing through Leslie Gulch divides two wilderness study areas, thus the area has wilderness status until a final decision is made by the BLM. In 1983, we (DRF and WHC), began a study of the pollination biology of a rare and endangered rose, *Ivesia rhypara* (Ertter and Reveal) within Leslie Gulch. Since the gulch is known to contain at least eight rare plant species (Grimes 1984), we conducted a trap nest survey in order to estimate the composition of the species pool of available pollinators. This paper describes the results of that survey and reports range extensions for eight species of bees and wasps.

SITE DESCRIPTION

Leslie Gulch is a drainage of approximately 90 km that empties into Owyhee Reservoir, Malheur County, Oregon and has a complicated stratigraphy of volcanic rocks and sediments. The gulch's talus slopes are composed of sparse quartz and sanidine phenocrasts in a vitroclastic matrix and are named the Leslie Gulch Ash-Flow Tuff Member of the Sucker Creek Formation (Grimes 1984). Major components of the sparse vegetation in the canyon are: *Poa sandbergii*, *Agropyron spicatum*, *Eriogonum strictum*, *Physaria chambersii*, *Astragalus sterilis*, *Linum perenne*, *Penstemon acuminatus*, *Eriophyllum lanatum*, *Juniperus osteosperma*, and *Purshia tridentata* (Ertter and Reveal 1977). The three trapnest localities were: Leslie Gulch mouth at Owyhee Reservoir, T26S R44E S3 (elev. 825 m); Leslie Gulch at Juniper Gulch, T26S R44E S13 (elev. 1050 m); Leslie Gulch State Park at Runaway Gulch, T26S R45E S9 (elev. 1430 m).

METHODS

Trap nests were made from 46.0 cm long *Sambucus* (elderberry) stems into which had been drilled a hole approximately 0.32 cm in diameter by 10.2 cm in length. The undrilled end was sharpened to facilitate placement in the ground (Parker and Bohart 1966). Sticks at each site were placed every 3 M in a straight line at each site and inspected periodically over the summer to ensure that none had been knocked over. Nests were placed at the following sites within Leslie Gulch: 99 sticks on 7 June 1984 at Owyhee Reservoir, 52 sticks on 23 April 1983 and 102 sticks on 7 June 1984 at Juniper Gulch, 51 sticks on 24 April 1983 and 99 sticks on 7 June 1984 at Runaway Gulch. After collection in the fall (12 November 1983 and 30 September 1984), nests were stored outdoors until they were dissected the following winter. The contents were placed in gelatin capsules (size 00) and incubated at 35°C until all specimens had emerged. Pinned insects were then identified and voucher specimens deposited at the USDA Bee Biology and Systematics Laboratory, Utah State University, Logan, Utah, and Orma J. Smith Museum of Natural History, College of Idaho, Caldwell, Idaho.

RESULTS AND DISCUSSION

Of 403 stems, 392 were recovered and dissected. Table 1 details the species and numbers that were collected at each site. Overall, such a composition is fairly typical for high deserts in Western North America but eight of these species have not before been reported from this area.

Ceratochrysis enhuycki Cooper has previously only been known from the east (NY to FL) and southwest (TX, UT, AZ). Its host at Leslie Gulch is unknown but is probably one of the species of *Leptochilus* (Krombein 1959). Both *Leptochilus washo* Parker and *L. trachysomus* (Bohart) are known from the southwest (Krombein 1979, Parker 1966) but neither has been recorded this far north. *Ancistrocerus simulator* Cameron was previously reported only from Nevada and California (Krombein 1979), as was *Pisonopsis clypeata* Fox with the addition of a Wyoming locality (Evans 1969). The use of burrows in plant stems by wasps is unusual but is not entirely unknown (Evans 1969).

Little is known about *Hylaeus polifolii* (Cockerell), but to date it has been reported only from California (Hurd 1979). Two megachilids exhibit the greatest range extensions. Previously, *Ashmeadiella meliloti* (Cockerell) was thought to be confined to the deserts of the southwestern U.S. and northern Mexico. *Stelis lateralis* Cresson has not been reported on this side of the continental divide but has been collected from Maine and Ontario to North Dakota and south to Georgia and Texas (Hurd 1979). The host of *S. lateralis* at Leslie Gulch is not known.

The difference between the 3 sites in species composition and numbers are probably not significant and likely reflect sample size. Altitude varies only about 600 meters between the 3 sites and vegetation is similar. The Owyhee Reservoir site may have yielded fewer species and numbers because of a relatively greater abundance of grasses and paucity of vegetation. The species reported herein are only those that will build nests in wooden stems and are part of a much larger bee and wasp fauna. The entire Owyhee Uplift is home to a large number of rare and endemic plant species. In order to understand the reproductive ecology of those populations, it is necessary to account for both pollinators and other insect associates. This study has been part of that effort.

Table 1. Number of individuals and species trapped at all sites. 1983 and 1984 are combined.

TAXA	STUDY SITE		
	Runaway Gulch	Juniper Gulch	Owyhee Reservoir
LEUCOSPIDAE			
<i>Leucospis affinis</i> Say	11		
CHRYSIDIDAE			
<i>Hedychridium solierellae</i> Bohart and Brumley	2		
<i>Chrysis derivata</i> Buysson	1	1	
<i>Chrysis</i> sp. #1	3	1	
<i>Chrysis</i> sp. #2		3	
<i>Chrysis</i> sp. #3		6	
<i>Chrysura</i> sp.		5	
<i>Ceratochrysis enhuycki</i> Cooper	5	5	3
MUTILLIDAE			
<i>Sphaerophalma s.l.</i>			1
EUMENIDAE			
<i>Leptochilus periallis</i> Parker	4	1	
<i>L. trachysomus</i> (Bohart)	1	9	
<i>L. washo</i> Parker	7	26	
<i>Stenodynerus blandoides</i> Bohart	4	1	
<i>Parancistrocerus acarigaster</i> Bohart	6	5	3
<i>Ancistrocerus simulator</i> Cresson		17	2
PEMPHREDONIDAE			
<i>Pemphredon lethifer</i> (Shuckard)	2		
LARRIDAE			
<i>Solierella peckhami</i> (Ashmead)	1		
<i>Pisonopsis clypeata</i> Fox	3		
<i>Trypoxylon sculleni</i> Sandhouse	1		
COLLETIDAE			
<i>Hylaeus polifolii</i> (Cockerell)	3		
MEGACHILIDAE			
<i>Stelis lateralis</i> Cresson	11	12	12
<i>Hoplitis albifrons</i> (Kirby)	3	3	3
<i>H. hypocrita</i> (Cockerell)	66	19	23
<i>H. grinnelli</i> Cockerell	11	7	
<i>H. sambuci</i> Titus	1	1	
<i>H. uvualis</i> (Cockerell)	10		
<i>Anthophora copelandica</i> (Cockerell)		6	
<i>Ashmeadiella melilotti</i> (Cockerell)	25	1	110
<i>Osmia bruneri</i> Cockerell	2		
<i>O. kincaidii</i> Cockerell	16	119	
<i>O. cyanella</i> Cockerell		6	
<i>O. sp. nov.</i>	86	14	
<i>Megachile montivaga</i> Cresson	9	44	
<i>Coelioxys banksi</i> Crawford	17	27	
ANTHOPHORIDAE			
<i>Ceratina pacifica</i> Smith	3	3	
Total Species	28	25	8

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